EAM580R-K - Analog

Encoder kit

Magnetic single- or multiturn encoders

Overview

- Encoder kit single- or multiturn / Analog
- E1 compliant design
- High protection up to IP 67
- High resistance to shock and vibrations
- Protection against corrosion CX (C5-M)
- Wire cross section 0.5 mm²
- Teach input for adjustment of measuring range
- Applicable up to PLd (ISO 13849)
- Magnetic rotor included in delivery

Technical data

Technical data - electrical ratings	
Voltage supply	8...30 VDC 14...30 VDC
Reverse polarity protection	Yes
Consumption typ.	20 mA (24 VDC, w/o load)
Initializing time	≤ 170 ms after power on
Response time	< 1 ms
Interface	Analog 0...10 V / 0.5...4.5 V / 4...20 mA / Resolution: 12 bit
Function	Multiturn Singleturn
Teach range	5°...359.9° (singleturn) 5°...32767 turns (multiturn)
Absolute accuracy	±0.15 ° (+20 ±15 °C) ±0.25 ° (-40...+85 °C) sensor (see info working distance)
Accuracy analog output	±0.5 % of whole measuring range (-40...+85 °C)
Sensing method	Magnetic
Interference immunity	EN 61000-6-2 ISO 11452-2:2004* / -5:2002* ISO 7637-2:2004* ISO 10605:2008 + Amd 1:2014 (CD ±8 kV / AD ±15 kV) * Severity level according to ECE R10 (Rev. 4)
Emitted interference	EN 61000-6-4 CISPR 25:2008 (30...1000 MHz) ISO 7637-2:2004* * Severity level according to ECE R10 (Rev. 4)

Technical data - electrical ratings	
$MTTF_d$ (ISO 13849)	High (>100 years) Use in safety functions exclusively based on Application Note and MTTFd reliability prediction (request separately).
Programmable parameters	Measuring range teachable
Diagnostic function	DATAVALID
Factory setting	360° and 10 revolutions (other on request)
Approval	UL approval / E217823
Technical data - mechanical design	
Size (flange)	ø58 mm
Shaft type	ø6 mm (magnet bore) ø8 mm (magnet bore) ø12 mm (magnet bore)
Protection EN 60529	IP 67
Operating speed	≤6000 rpm
Working distance	1.1 ±0.9 mm axial / ≤ 0.3 mm eccentricity
Material	Housing: steel, powder-coated Flange: aluminium
Corrosion protection	IEC 60068-2-52 Salt mist for ambient conditions CX (C5-M) according to ISO 12944-2
Operating temperature	-40...+85 °C (see general information)
Relative humidity	95 %
Resistance	EN 60068-2-6 Vibration 30 g, 10-2000 Hz EN 60068-2-27 Shock 500 g, 1 ms
Weight approx.	250 g
Connection	Flange connector M12, 5-pin Cable 2 m

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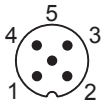
General information

Self-heating correlated to installation and ambient conditions as well as to electronics and supply voltage must be considered for precise thermal dimensioning. Operating the encoder close to the maximum limits requires measuring the real prevailing temperature at the encoder flange. For the current output (version C4), a load >470 Ohm must be selected when supplied with 24 VDC in order to minimize the self-heating of the encoder and not to exceed the maximum operating temperature. For cable lengths >2 m, a current output (version C4) is to be preferred due to the voltage drop in order to avoid effects on the accuracy.

Terminal assignment

Flange connector M12, 5-pin

Pin	Signals	Description
1	0 V	Supply voltage
2	+Vs	Supply voltage
3	Uout/Iout	Analog output
4	DV	DATAVALID output
5	Teach	Teach input



Cable

Core color	Signals	Description
white	0 V	Supply voltage
brown	+Vs	Supply voltage
green	Uout/Iout	Analog output
yellow	DV	DATAVALID output
grey	Teach	Teach input
Cable data: 5 x 0.5 mm²		

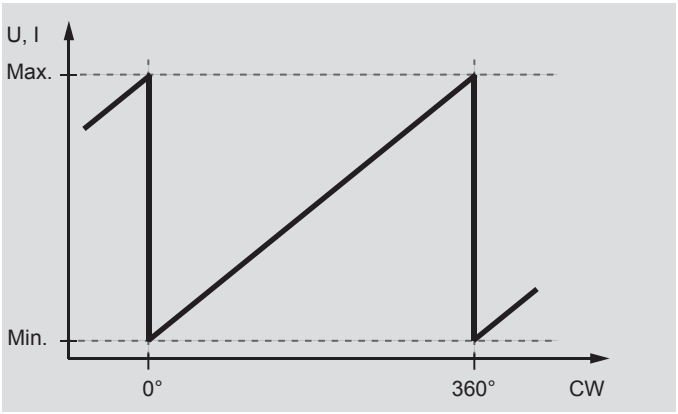
Terminal significance

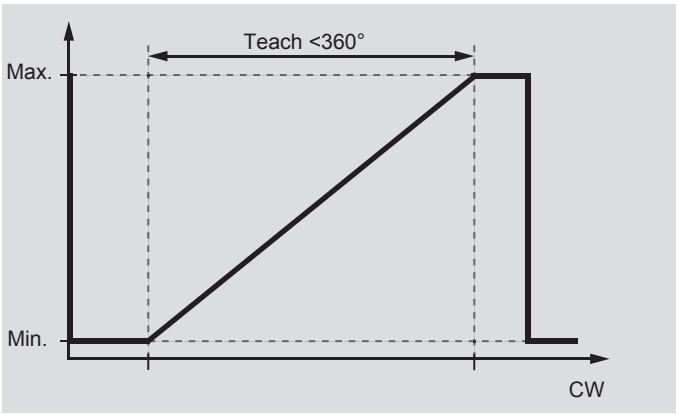
Iout	Current output Load: <500 Ω
Uout	Voltage output Current output: max. 10 mA Load resistor: >1 kΩ between Uout / 0 V (version 0...10 V) >2 kΩ (version 0.5...4.5 V)
Teach	Teach in Maximum 0...+Vs Level LOW: <1 V Level HIGH: >2.1 V
DV	Diagnostic output/Teach output Function normal operation: DATAVALID (Diagnostic output) Type NPN output, Pull-Up 10 kΩ integrated - No error: HIGH - Error: LOW Function teach process: Teach status

Output signals

Singleturn

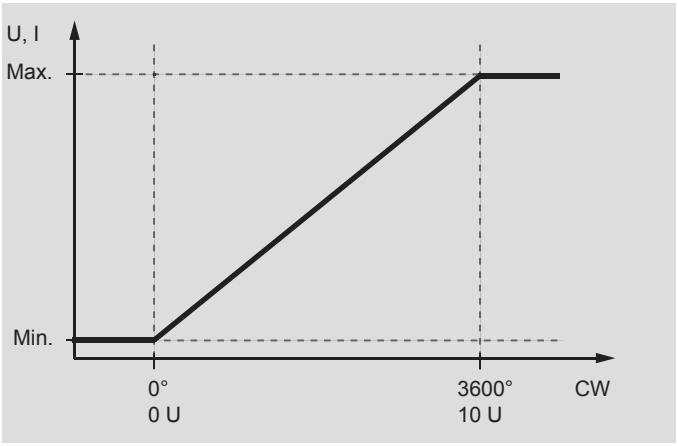
Default: CW, 360°, rotating direction and measuring range teachable.





Multiturn

Default: CW, 10 turns, rotating direction and measuring range teachable (max. 32767 turns).



Note: The encoder can be mounted at a specific position and set to position 1 by means of factory preset.

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Teach process

Activate teach process
Start teach process within 5 minutes after power on. Set teach input for >5 seconds on HIGH and afterwards on LOW level.
DV/Status output: Oscillates after 5 seconds.

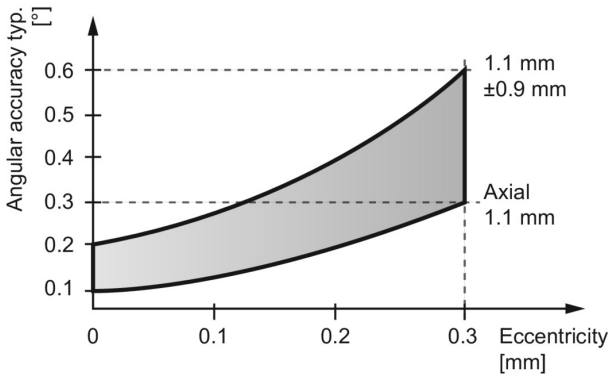
Position 1
Get encoder on position intended for min. voltage output / current output.
Set teach input for >0.1 seconds on HIGH.
DV/Status output: Switches to HIGH level for 3 seconds and flashes shortly.

Position 2
Get encoder on position intended for max. voltage output / current output.
Set teach input for >0.1 seconds on HIGH.
DV/Status output: Switches to HIGH level for 3 seconds and flashes shortly. If measuring range is exceeded or the limits are too close to each other, the teaching process was not successful and has to be repeated.

Default
Set teach input for >15 seconds on HIGH.
DV/Status output: Oscillates after 5 seconds.

Working distance

The ideal working distance of the magnet related to the encoder is at an eccentricity of 0 mm and an axial distance of 1.1 mm. Deviation affects the accuracy as shown in following diagram.



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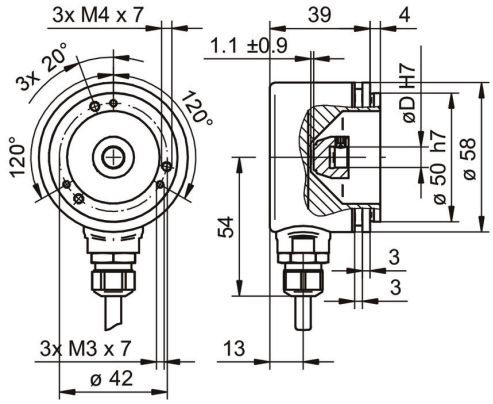
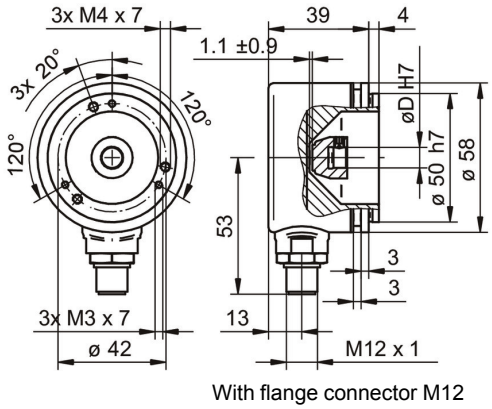
Dimensions



With cable



With flange connector M12

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Ordering reference

	EAM580R	-	K	Y	##	.	7	#	##	.	####	1	.	A
Product														
	EAM580R													
Shaft type														
Kit			K											
Flange (kit)														
Servoflansch, Nut ø53 mm, M3/M4				Y										
Magnet holder / bore diameter														
ø6 mm					6									
ø8 mm					8									
ø12 mm					C									
Protection class														
IP 67							7							
Connection														
Cable radial, 2 m								L						
Flange socket radial, M12, 5-pin, male contacts, A-coded								N						
Voltage supply / interface														
14...30 VDC, current output 4...20 mA									C4					
14...30 VDC, voltage output 0...+10 V									V1					
8...30 VDC, voltage output 0.5...+4.5 V									V3					
Measuring range														
0...360°											A360			
0...3600°											A36A			
Output characteristics														
One-channel, rising CW												1		
Operating temperature														
-40...+85 °C														A